

CLAIMS

1. An apparatus for controlling the shutdown of an internal combustion engine, comprising:

an intake manifold configured to conduct an intake charge of air to an intake port of the internal combustion engine;

a throttle configured to alter said intake charge of air to said intake port of the internal combustion engine; and

a controller configured to control said throttle such that a substantial termination of said intake charge of air is provided during the shutdown of the internal combustion engine.

sub b

2. The apparatus of Claim 1, wherein said controller is configured to control said throttle such that said substantial termination of said intake charge of air is provided for a predetermined period of time after initiation of the shutdown of the internal combustion engine.

3. The apparatus of Claim 1, wherein said controller is further configured to terminate an engine spark during the shutdown of the internal combustion engine.

4. The apparatus of Claim 1, wherein said controller is further configured to halt a fuel injection during the shutdown of the internal combustion engine.

5. The apparatus of Claim 1, wherein said throttle is pivotally mounted within said intake manifold.

Sub D1

6. The apparatus of Claim 1, wherein said substantial termination of said intake charge of air provides a flow rate through said intake manifold that is less than about twice an idle speed flow rate through said intake manifold.

7. The apparatus of Claim 1, wherein said substantial termination of said intake charge of air provides a flow rate through said intake manifold that is less than about an idle speed flow rate through said intake manifold.

8. The apparatus of Claim 1, wherein said substantial termination of said intake charge of air provides a flow rate through said intake manifold that is less than about thirty percent of an idle speed flow rate through said intake manifold.

9. The apparatus of Claim 1, wherein said substantial termination of said intake charge of air provides a flow rate through said intake manifold that is less than about ten percent of an idle speed flow rate through said intake manifold.

10. The apparatus of Claim 1, wherein the internal combustion engine is a spark ignition internal combustion engine.

Sub A2

11. A method of controlling the shutdown of an internal combustion engine, comprising:

receiving an ignition status indicative of a request to shutdown the internal combustion engine;

5 evaluating said ignition status to determine said request to shutdown the internal combustion engine; and

adjusting a throttle for a substantial termination of an intake charge of air through an intake manifold to an intake port of the internal combustion engine if said ignition status indicates said request to shutdown
10 the internal combustion engine.

sub B1

12. The method of Claim 11, wherein adjusting said throttle for said substantial termination of said intake charge of air through said intake manifold to said intake port of the internal combustion engine is provided for a predetermined period of time.

13. The method of Claim 11, further comprising adjusting an engine spark during the shutdown of the internal combustion engine.

14. The method of Claim 11, further comprising adjusting a fuel injection during the shutdown of the internal combustion engine.

15. The method of Claim 11, wherein said throttle is pivotally mounted within said intake manifold.

16. The method of Claim 11, wherein said substantial termination of said intake charge of air provides a flow rate through said intake manifold that is less than about twice an idle speed flow rate through said intake manifold.

17. The method of Claim 11, wherein said substantial termination of said intake charge of air provides a flow rate through said intake manifold that is less than about an idle speed flow rate through said intake manifold.

sub P1

18. The method of Claim 11, wherein said substantial termination of said intake charge of air provides a flow rate through said intake manifold that is less than about thirty percent of an idle speed flow rate through said intake manifold.

19. The method of Claim 11, wherein said substantial termination of said intake charge of air provides a flow rate through said intake manifold that is less than about ten percent of an idle speed flow rate through said intake manifold.

sub A3

20. The method of Claim 11, wherein said predetermined period of time is less than about twenty seconds.

sub P

21. The apparatus of Claim 1, wherein the internal combustion engine is a spark ignition internal combustion engine.

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